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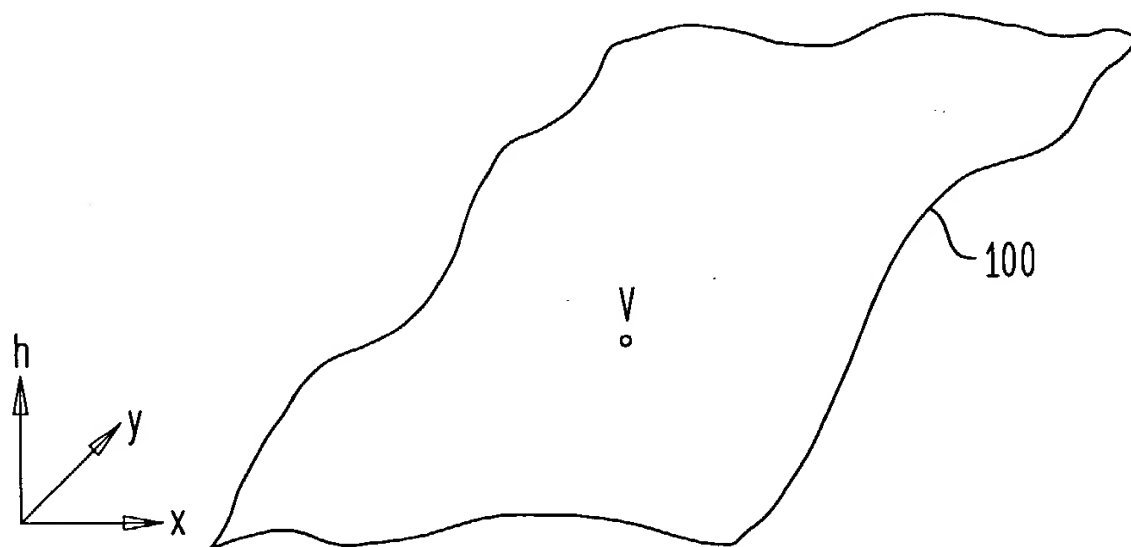
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FIG. 1



EXAMPLE OF A TERRAIN DEFINED BY A HEIGHT FIELD

FIG. 2

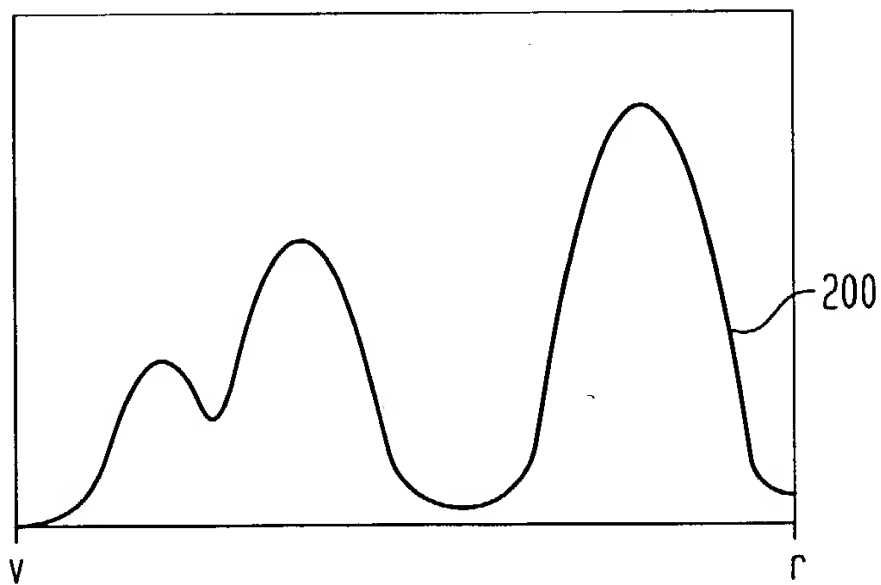




FIG. 3A

OCCLUSION HEIGHT FIELD GENERATED BY
PERSPECTIVE HEIGHT FIELD PROPAGATION

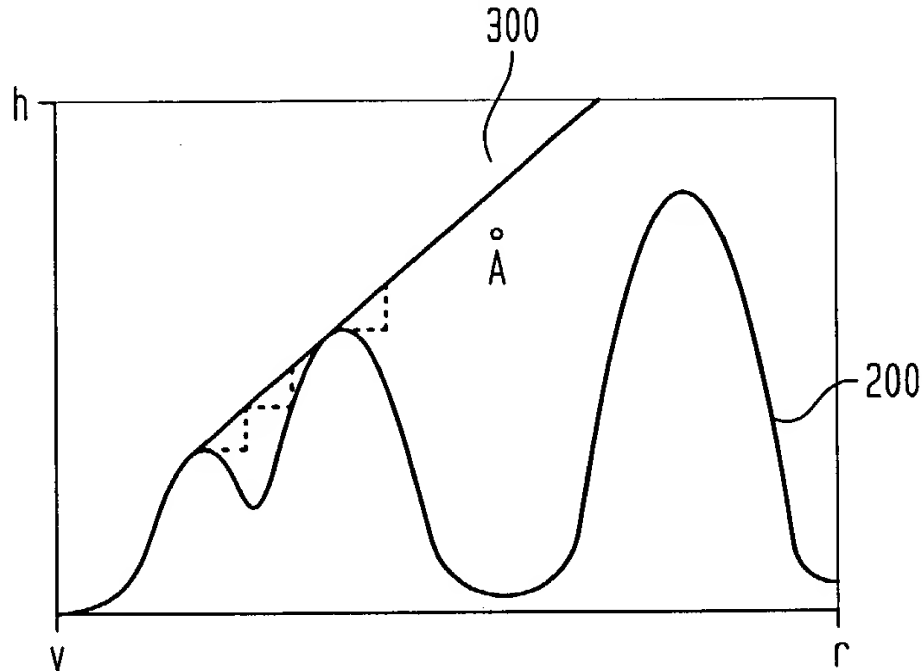


FIG. 3B

OCCLUSION HEIGHT FIELD GENERATED BY
ORTHOGRAPHIC HEIGHT PROPAGATION

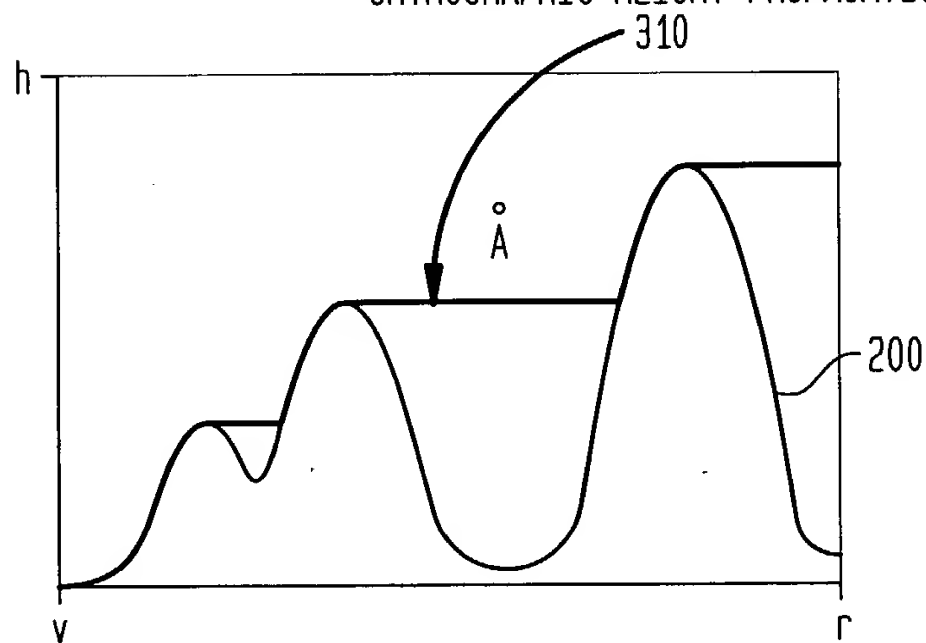


FIG. 4

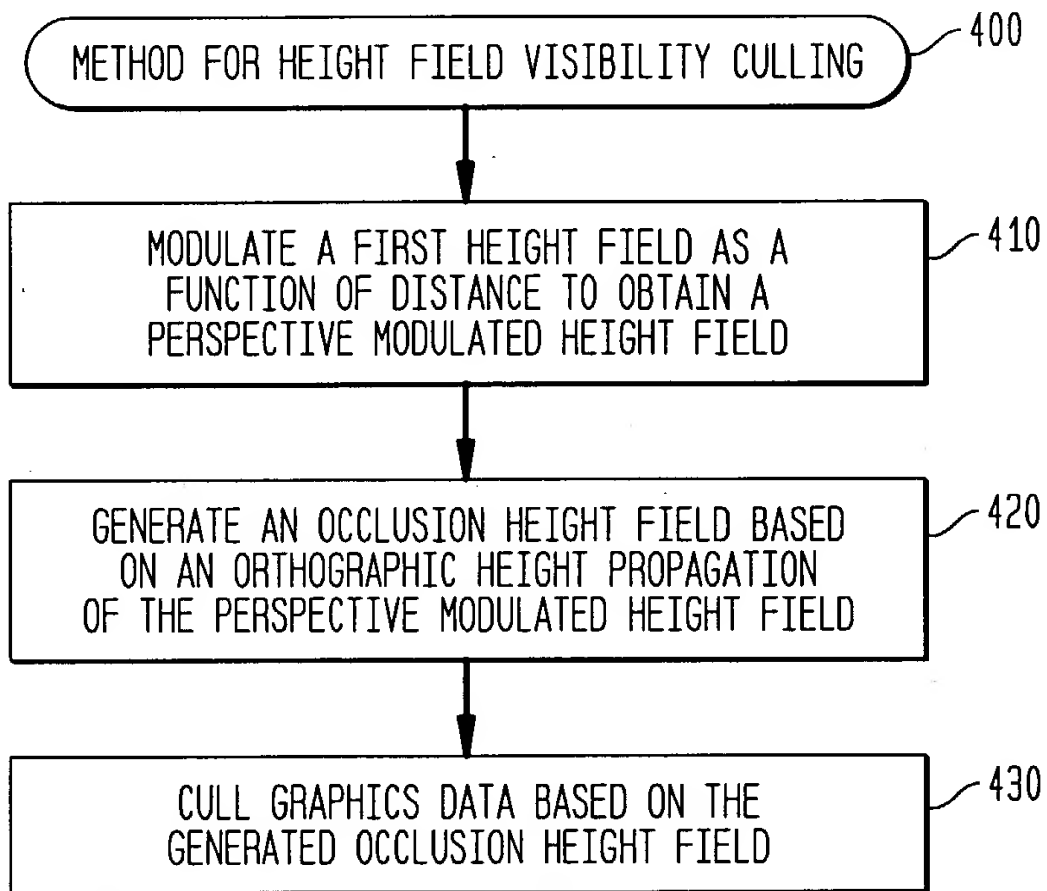
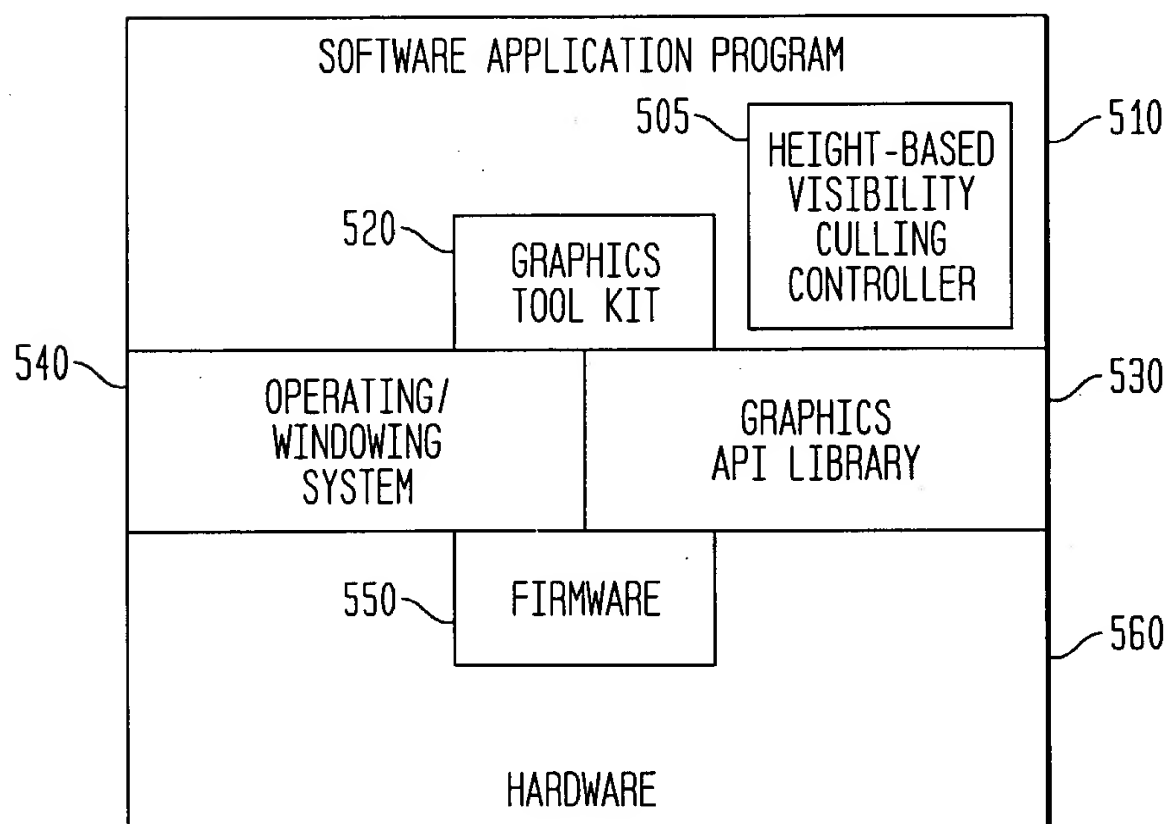


FIG. 5

ARCHITECTURE 500





Appl. No. 09/923,398; Filed: Aug 8, 2001
Dkt No. 2198.0100001; Group Unit: 2671
Inventor: Hansong Zhang Tel: 202-371-2600
Title: Method, System, and Computer Program Product
for Visibility Culling of Terrain

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FIG. 6A

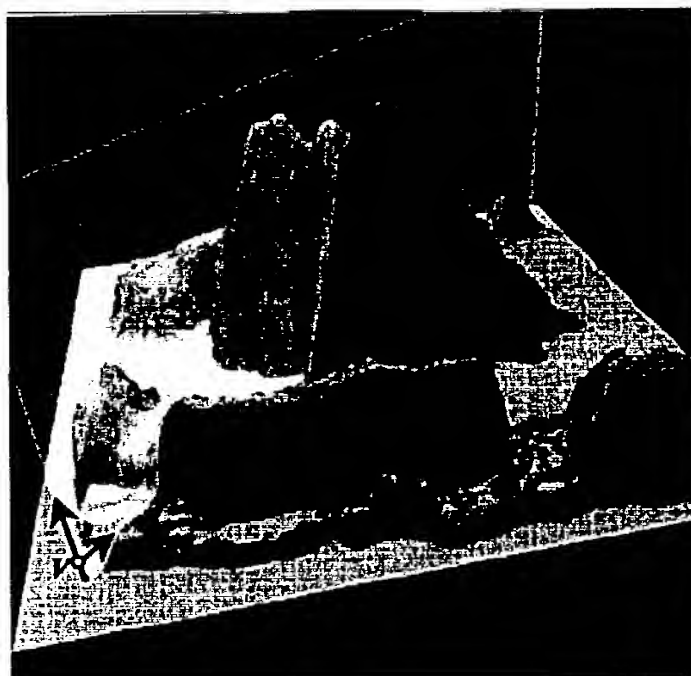




FIG. 6B

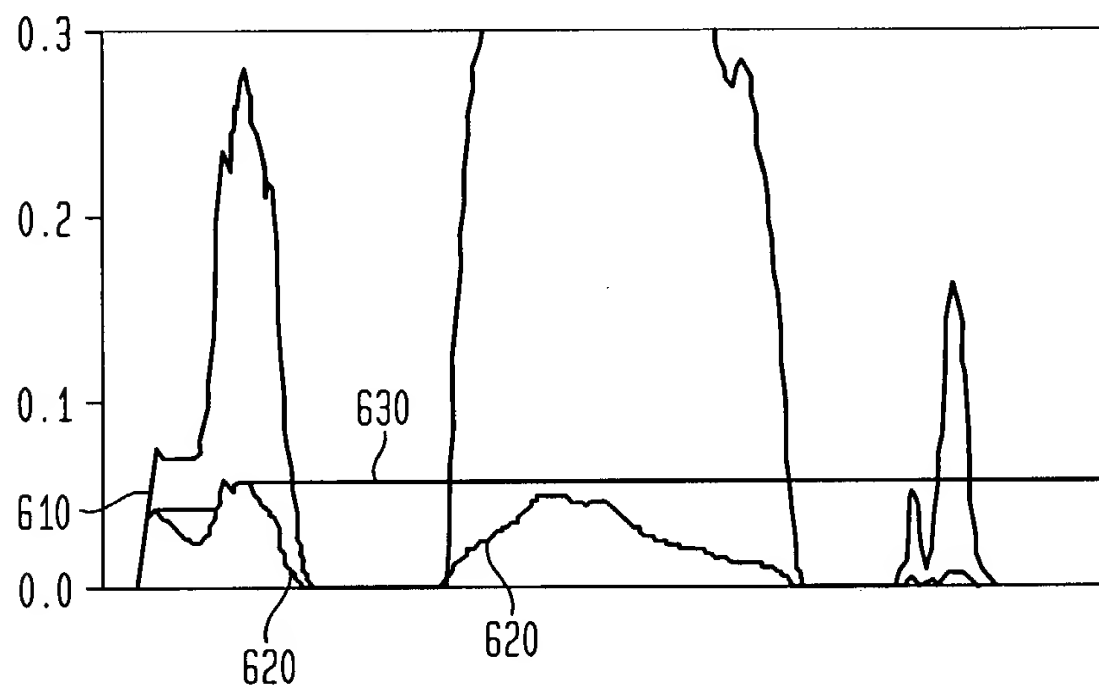
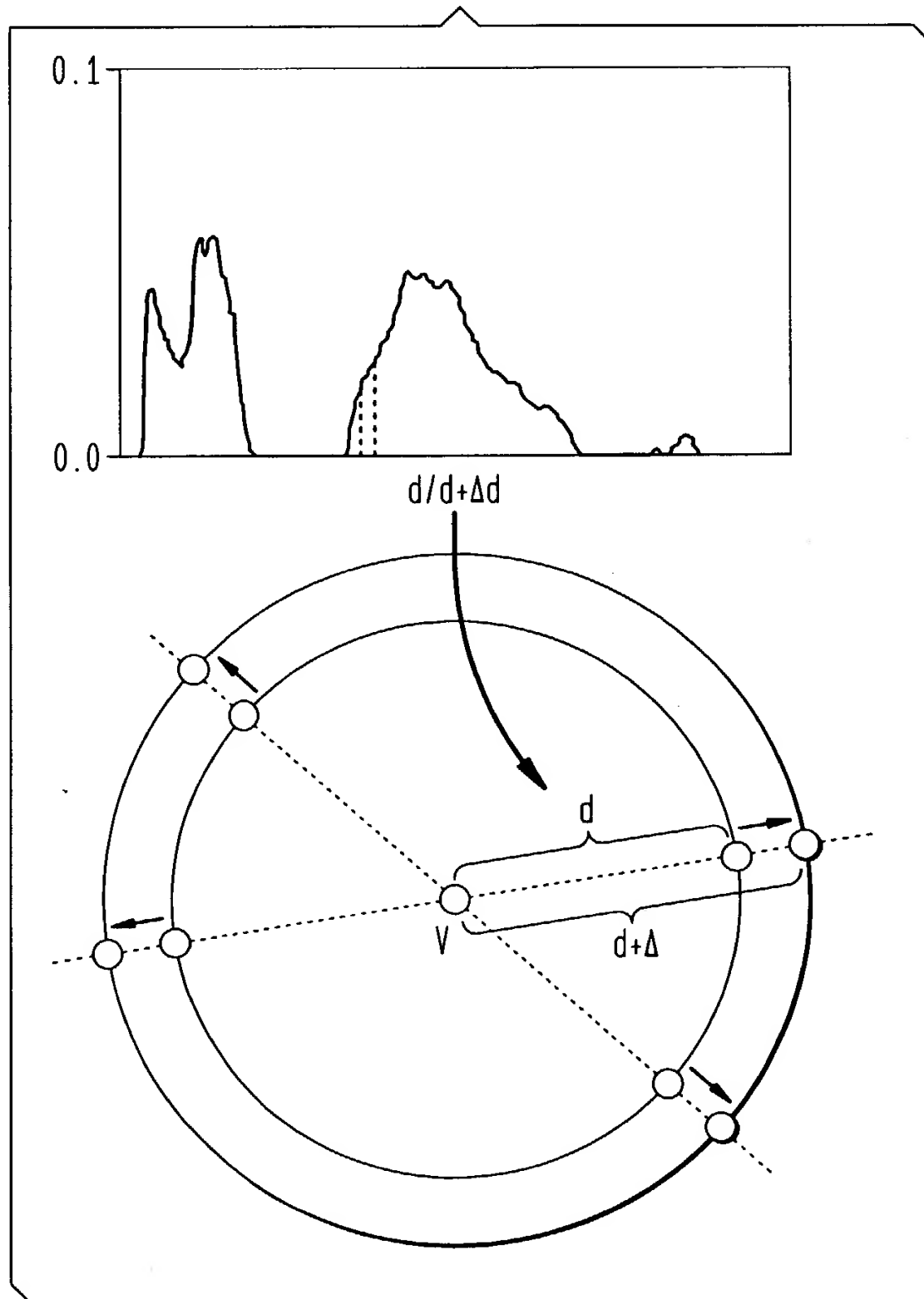




FIG. 7



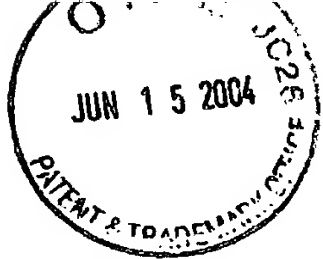
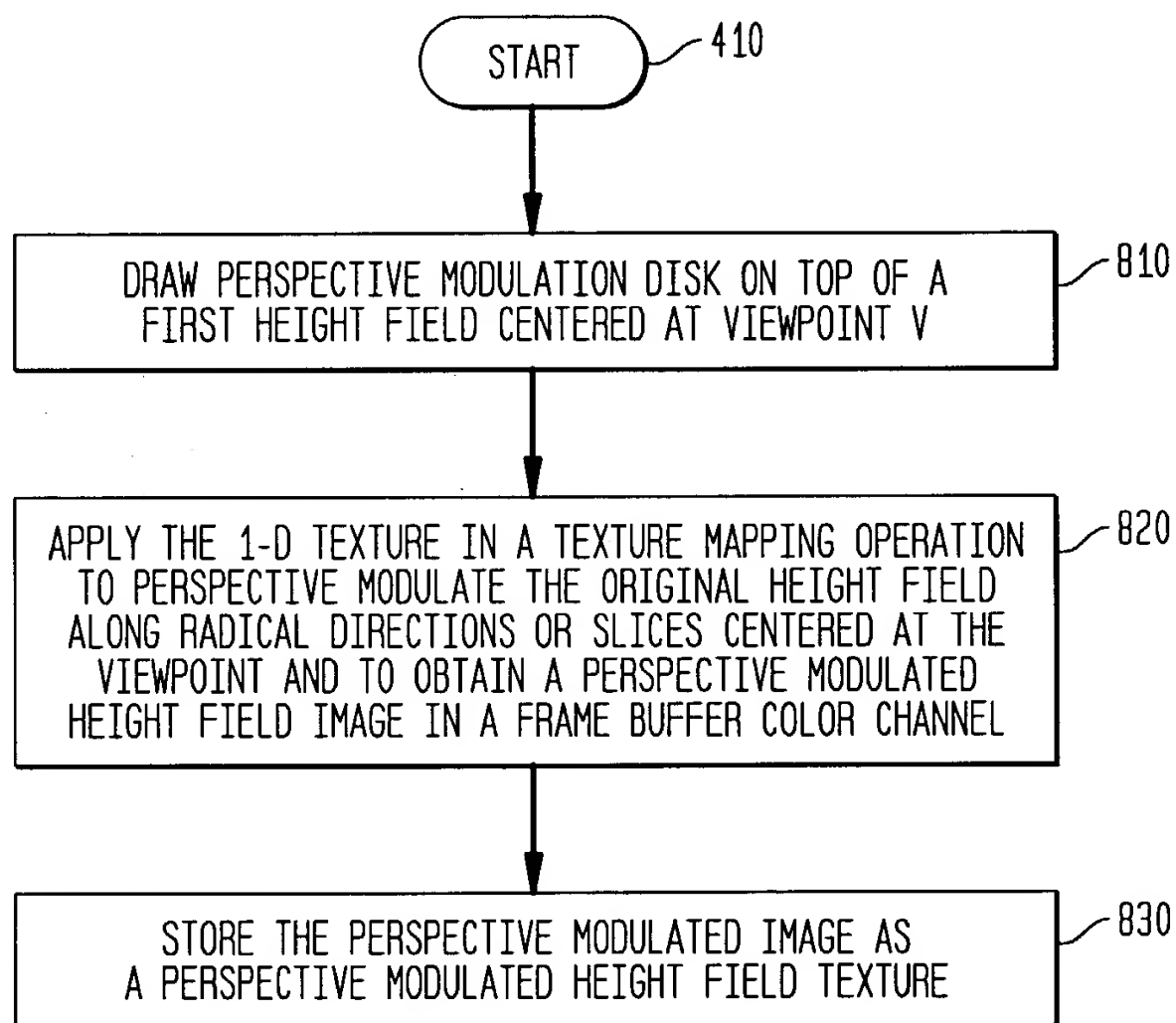
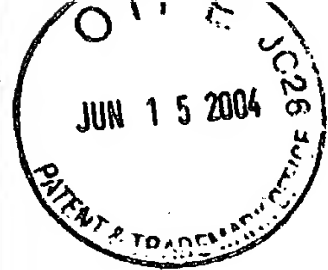


FIG. 8A

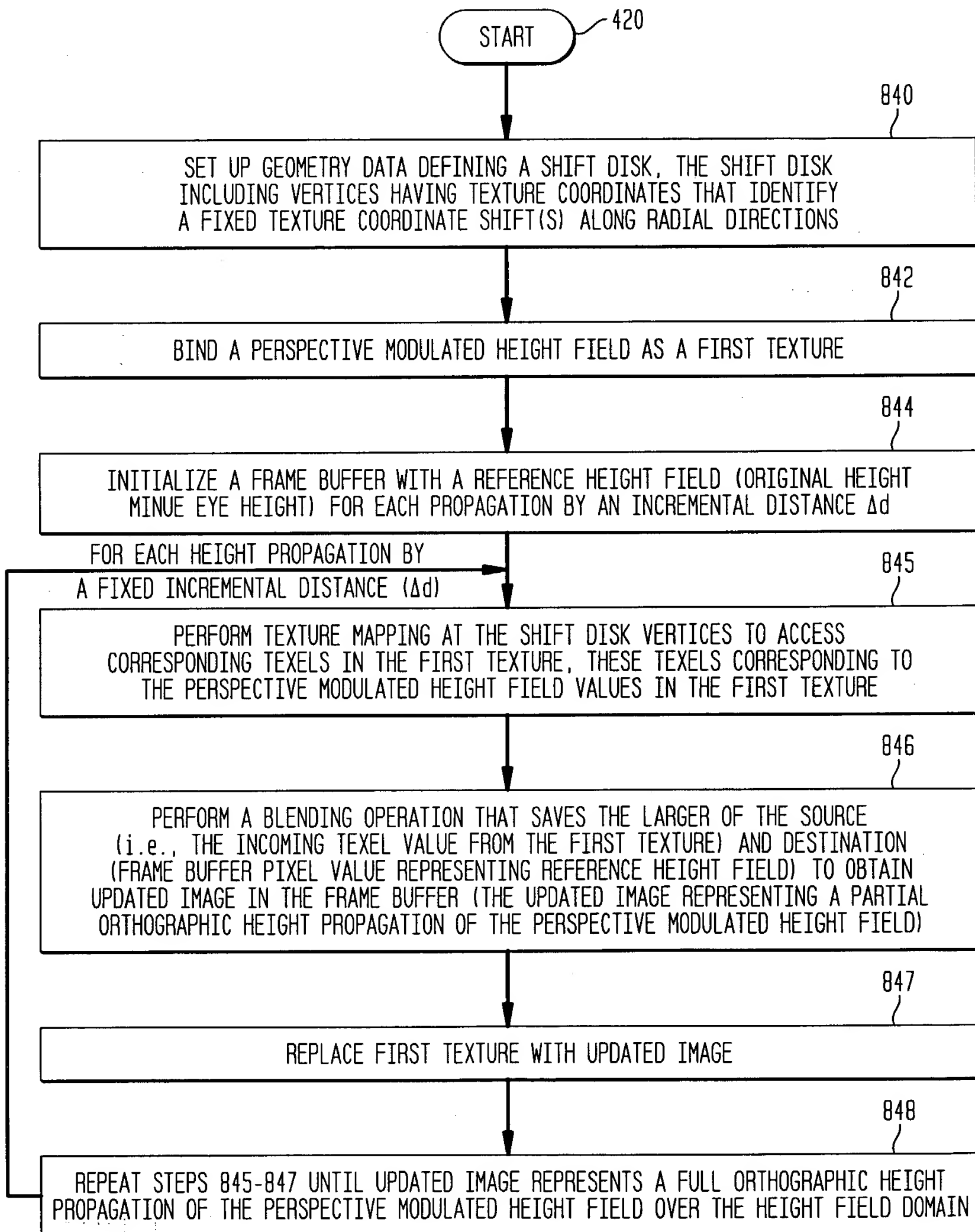


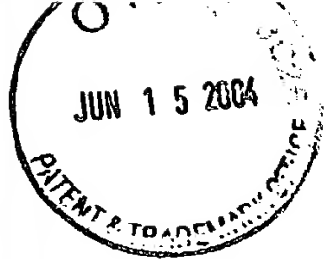


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FIG. 8B

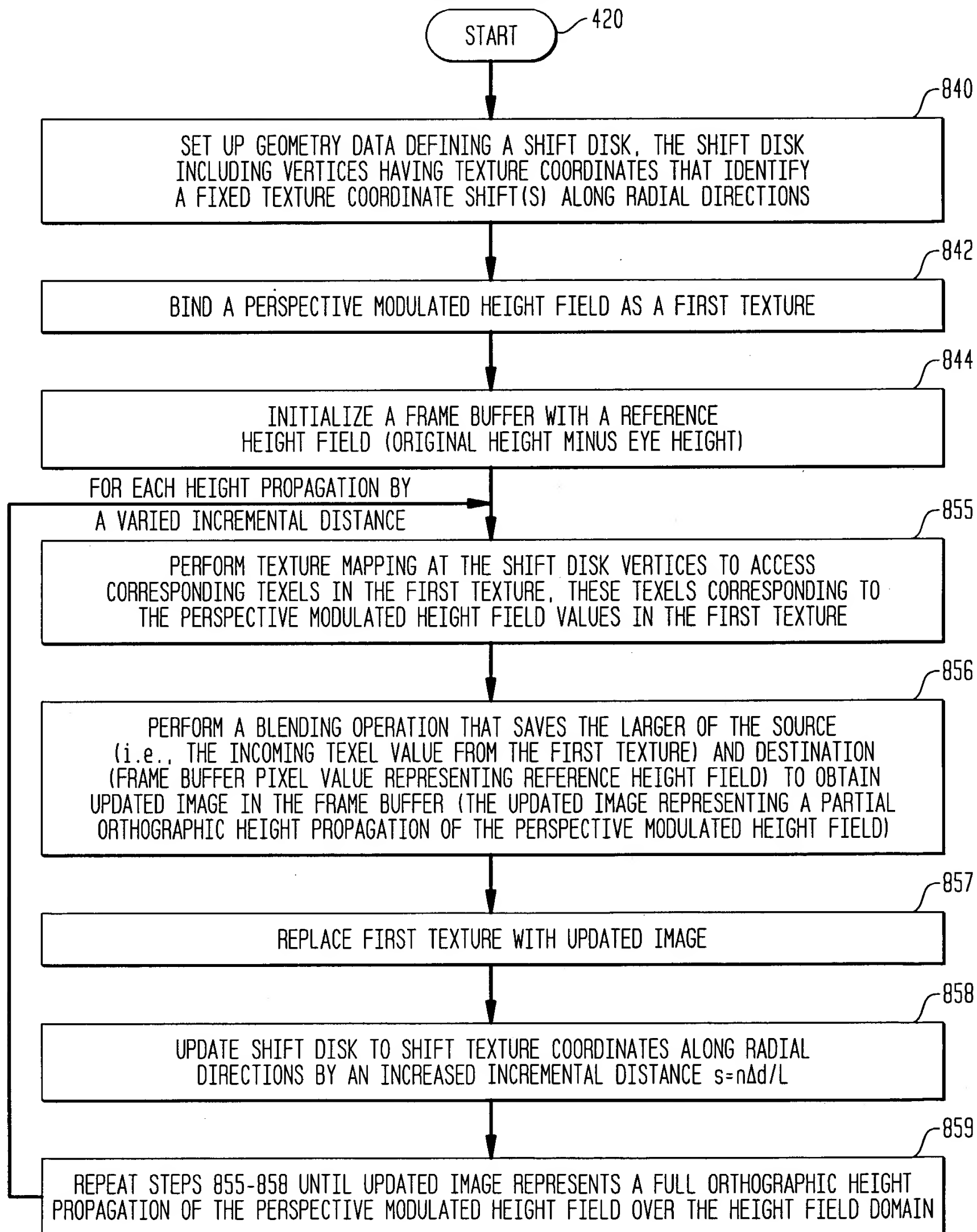
SHIFT DISK-HEIGHT PROPAGATION FIXED AT EACH ITERATION





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FIG. 8C

SHIFT DISK-HEIGHT PROPAGATION VARIED AT EACH ITERATION





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FIG. 8D

SHIFT TEXTURE-HEIGHT PROPAGATION FIXED AT EACH ITERATION

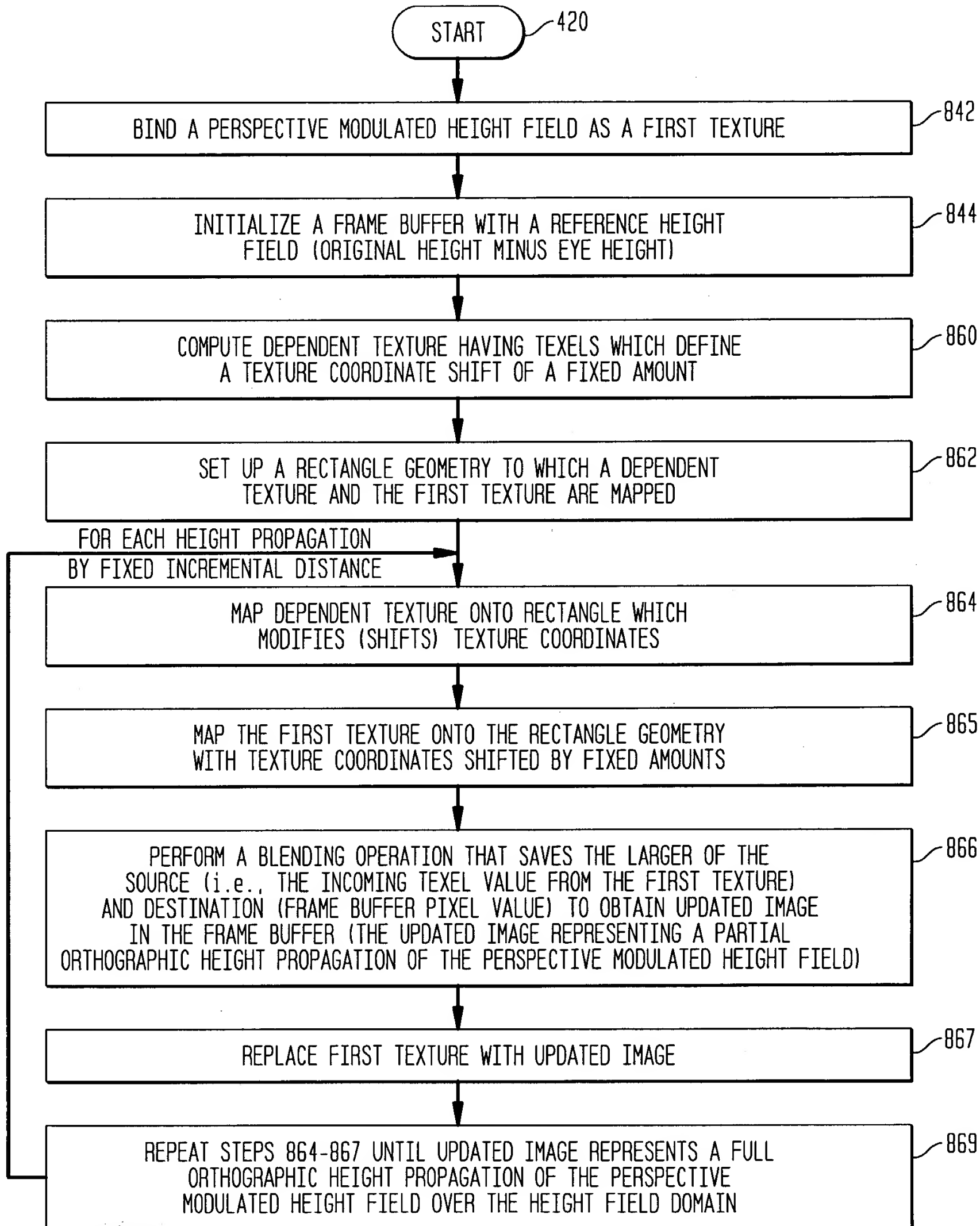
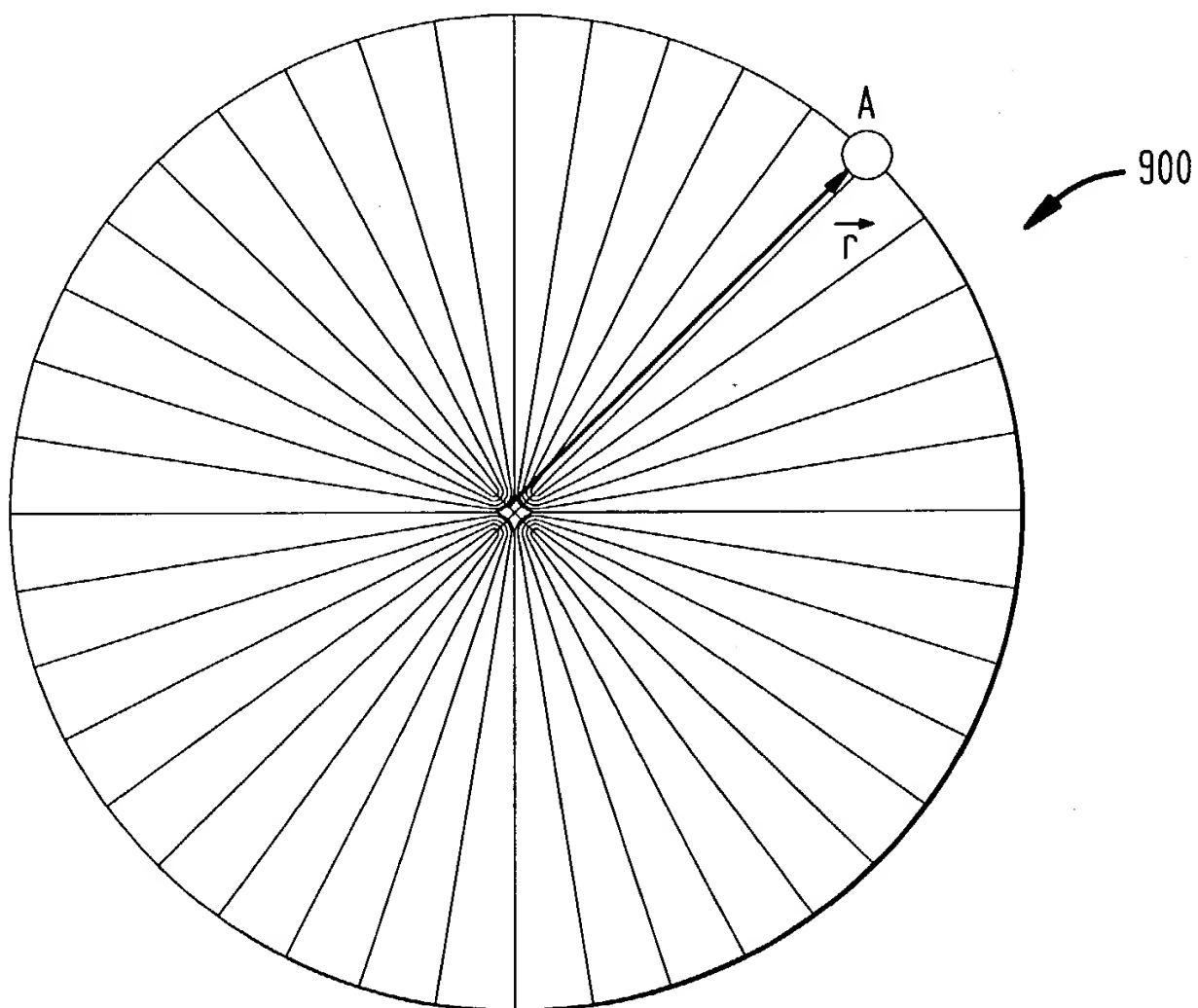




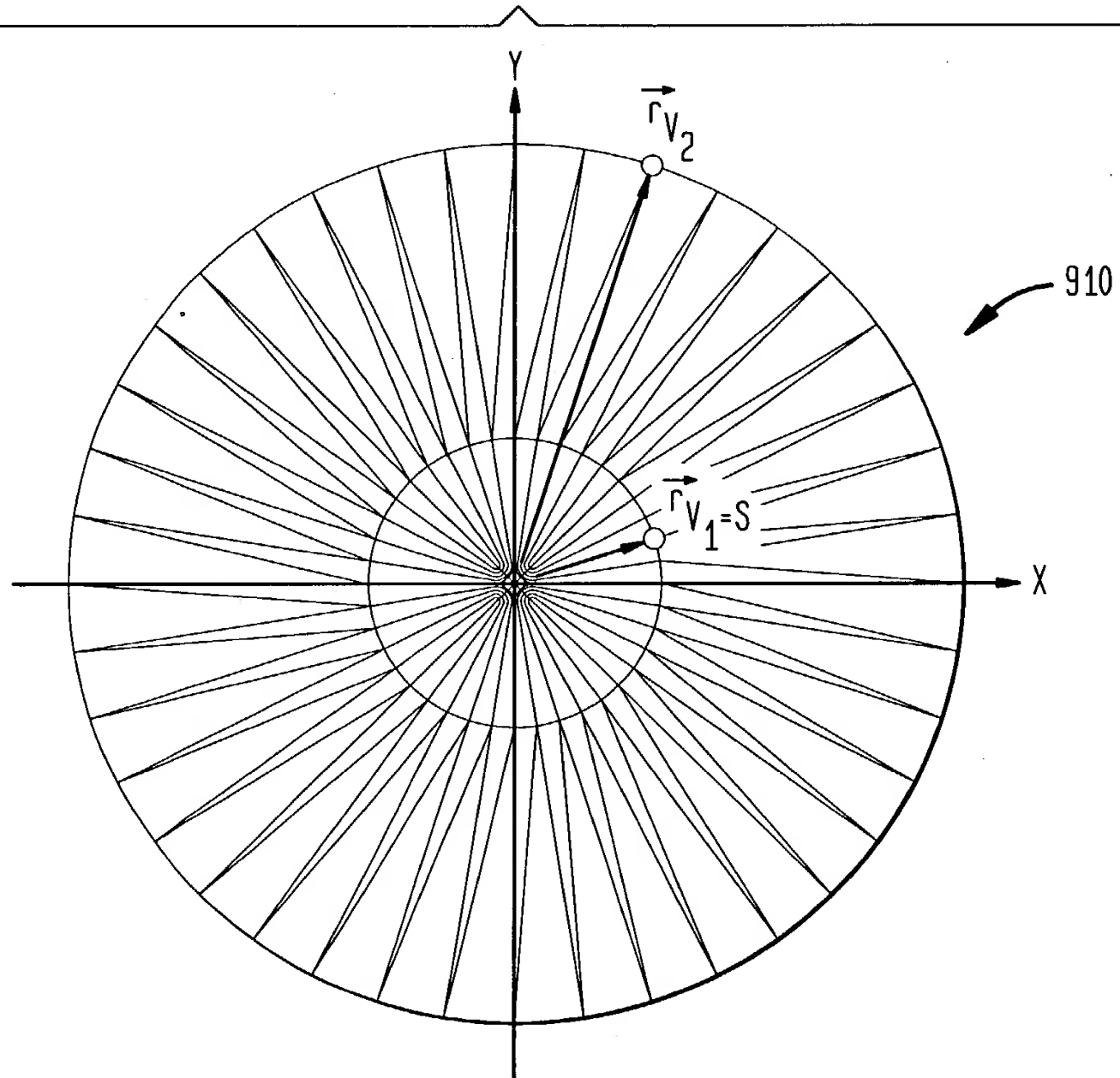
FIG. 9A





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FIG. 9B



V_1 's POSITION ($|\vec{r}_{V_1}| \cos \theta_{V_1} / 2 + 0.5$, $|\vec{r}_{V_1}| \sin \theta_{V_1} / 2 + 0.5$)

V_1 's TEXTURE COORDINATES: (0.5, 0.5) (SAME AS THE DISK CENTER)

V_2 's POSITION ($|\vec{r}_{V_2}| \cos \theta_{V_2} / 2 + 0.5$, $|\vec{r}_{V_2}| \sin \theta_{V_2} / 2 + 0.5$)

V_2 's TEXTURE COORDINATES: ($|\vec{r}_{V_2}| \cos \theta_{V_2} / 2 + 0.5$, $|\vec{r}_{V_2}| \sin \theta_{V_2} / 2 + 0.5$)

THE SHIFT DISK. V_1 REPRESENTS ANY VERTEX ON THE INNER RING, AND V_2 THAT OF THE OUTER. s IS THE AMOUNT OF SHIFT. RADIUS OF THE INNER RING IS s . θ IS THE ANGLE WITH THE X AXIS. A TRANSLATION TO THE EYE POSITION IS ADDED TO BOTH POSITIONS AND TEXTURE COORDINATES USING THE MODEL-VIEW AND THE TEXTURE MATRIX, RESPECTIVELY, WHEN THE DISK IS DRAWN.



FIG. 10

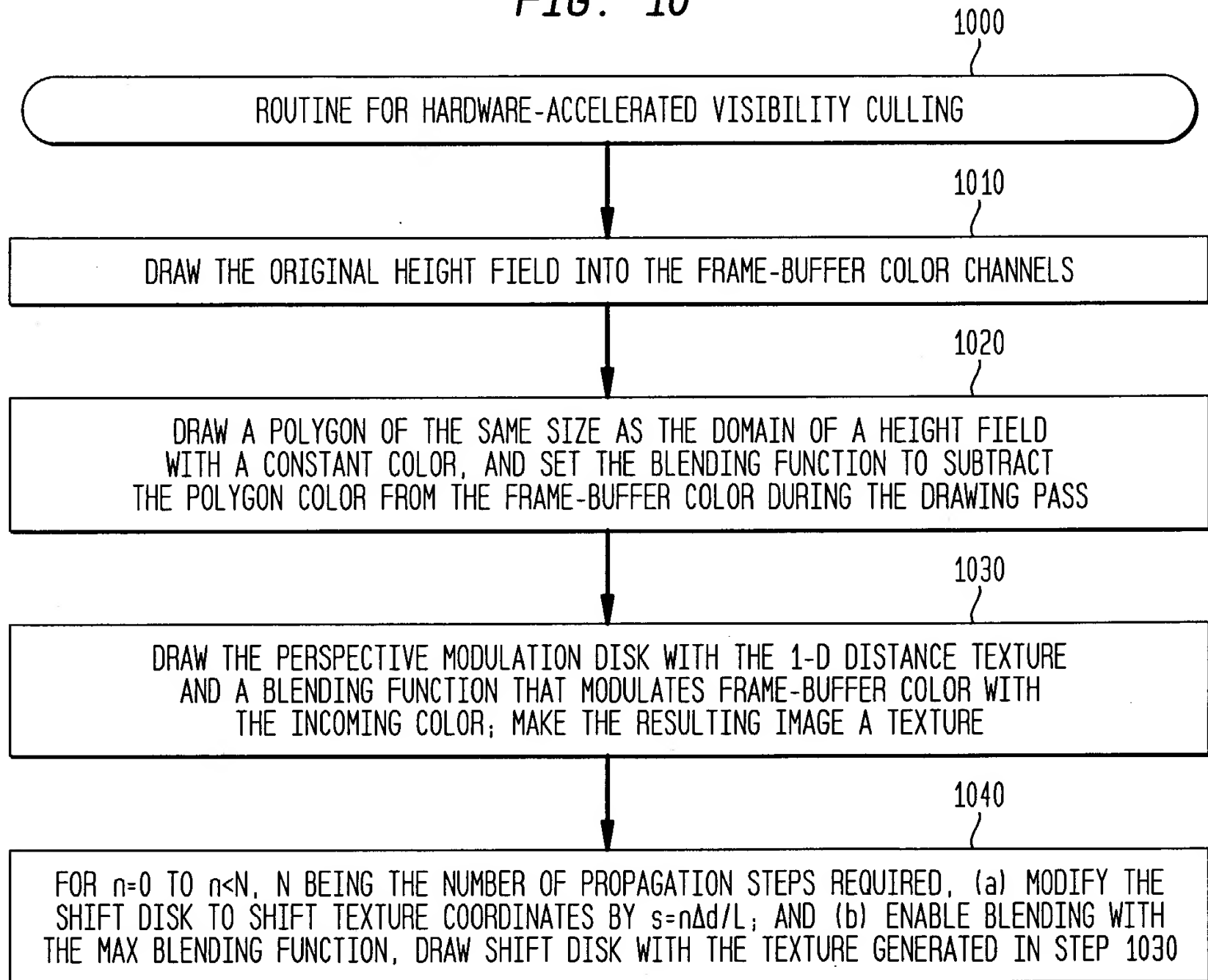
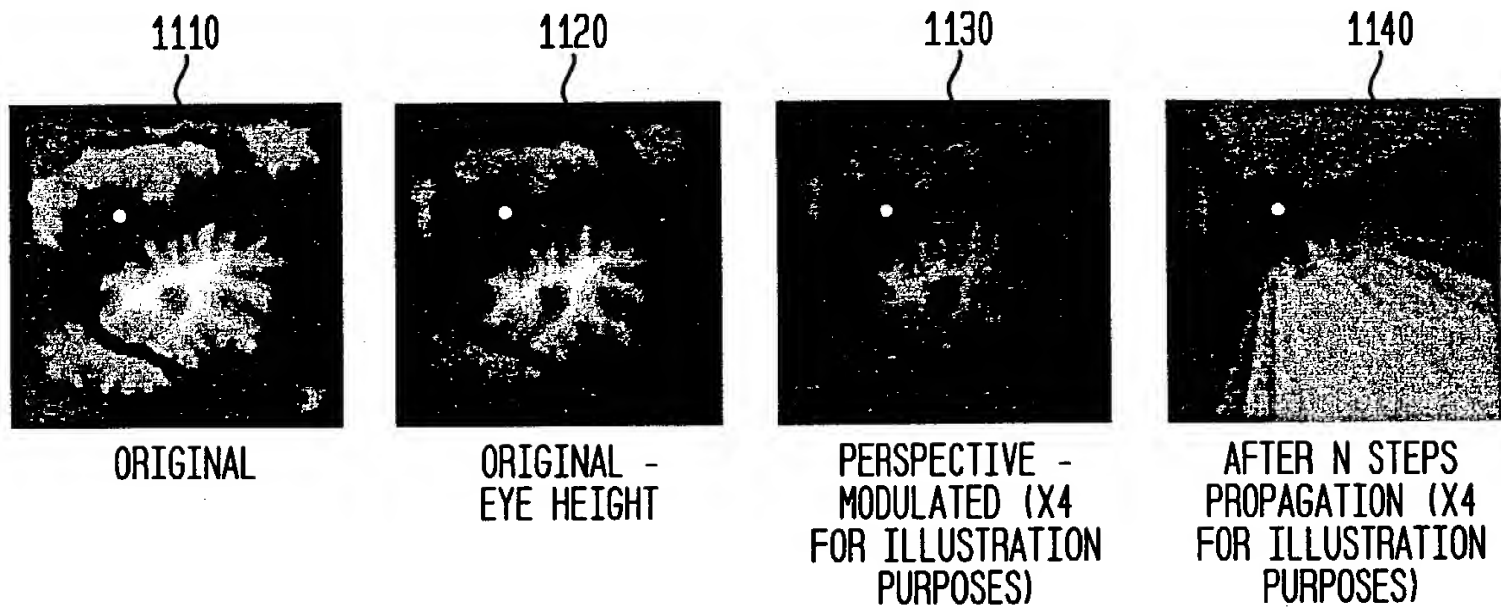




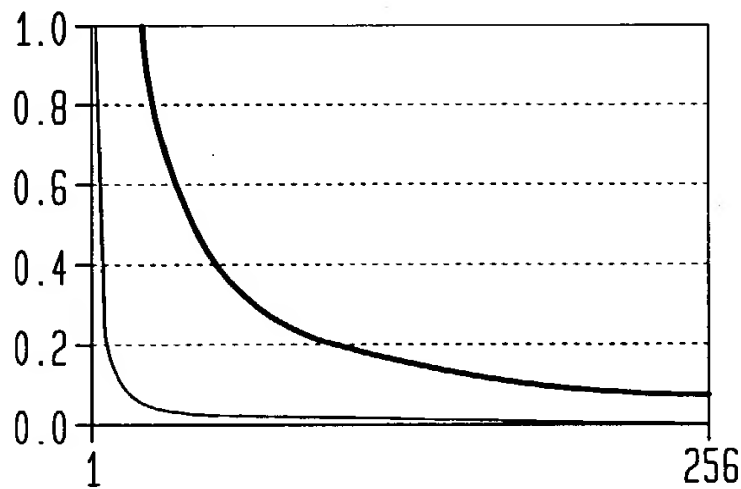
FIG. 11





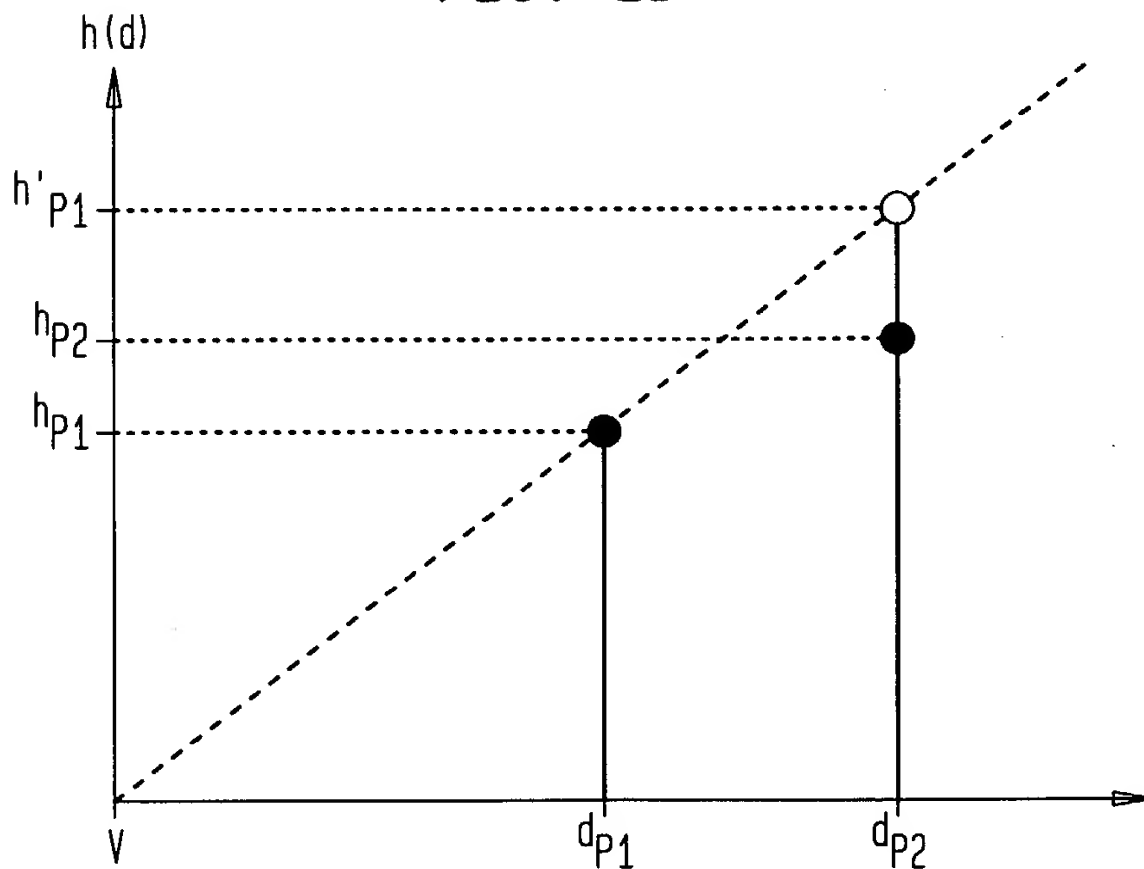
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FIG. 12



THE $1/d$ FUNCTION (THE THINNER LINE) AND THE SAME FUNCTION MULTIPLIED BY A FACTOR OF 20 (i.e., $f_{\tilde{H}}$ 20). USING THE LATTER FOR PERSPECTIVE MODULATION RESULTS IN MORE USEABLE RANGE IN THE MODULATED HEIGHT FIELD AND THUS THE OCCLUSION HEIGHT FIELD DERIVED FROM IT.

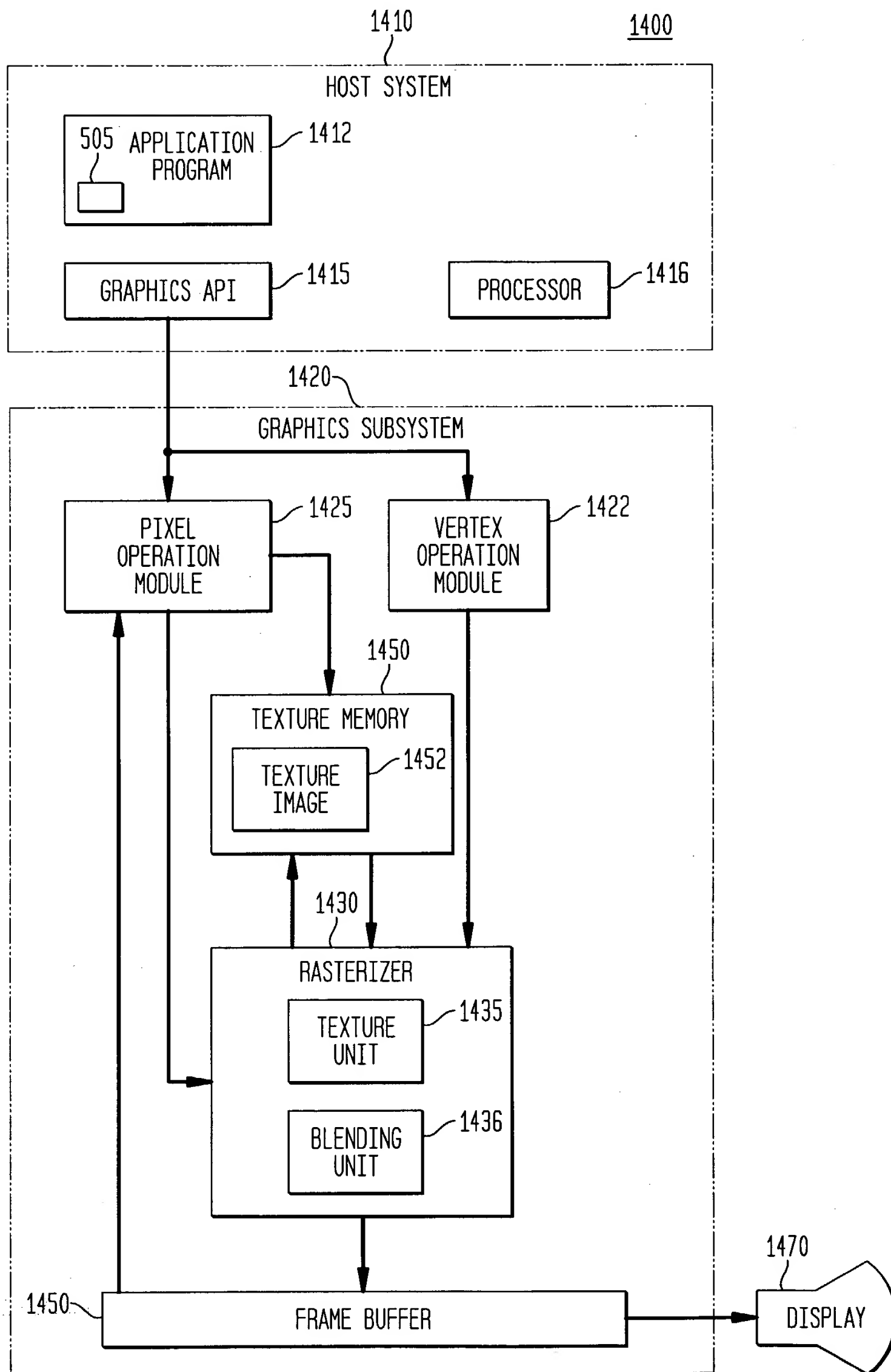
FIG. 13



ORTHOGRAPHIC HEIGHT PROPOGATION ON A HEIGHT FIELD, AFTER PERSPECTIVE MODULATION, IS EQUIVALENT TO PERSPECTIVE HEIGHT PROPAGATION ON THE ORIGINAL HEIGHT FIELD



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FIG. 14





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FIG. 15

COMPUTER SYSTEM
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